

## CLAIMS

What is claimed is:

1 Sub  
H4  
2 A method of switching a packet, the method comprising:  
3 computing a tag for the packet;  
4 looking up the tag in a table, the table comprised of entries, the entries  
5 associating switching information with a tag; and  
6 using switching information associated with the tag in the table to switch the  
packet if there is an entry for the tag in the table.

1 2. The method of claim 1, wherein the switching further comprises determining  
2 the switching information if there is no entry for the tag in the table, and the  
3 determining comprising sending the packet to a system with resources for routing a  
4 packet and determining switching information.

1 3. The method of claim 2, further comprising updating the table to include an  
2 entry for the tag with switching information responsive to the determining.

1 4. The method of claim 2, further comprising including an entry in the table for  
2 the tag associated with a switching instruction indicating that packets should be  
3 dropped until the determining is complete.

1 5. The method of claim 1, wherein the entries in the table are removed if a the  
2 tag corresponding to the entry has not been looked up in a predetermined period.



1 13. The method of claim 10, wherein <sup>A</sup>the predetermined period for which entries  
2 in the table are retained without being looked up is increased when the error rate  
3 decreases below <sup>the</sup>a predetermined level.

1 14. The method of claim 7, wherein the plurality of tags are computed in parallel  
2 by the plurality of flow detectors.

1 15. The method of claim 7, wherein each of the plurality of tags computed by the  
2 plurality of flow detectors are the same length.

1 16. The method of claim 7, wherein the plurality flow detectors are associated  
2 with a priority, and wherein the switching occurs according to the priority of the  
3 flow detector.

1 17. The method of claim 7, wherein the error rate of the switching system is  
2 measured based on the number of cross flow detector tag matches in the table.

1 18. The method of claim 1, wherein the computing further comprises using a  
2 mask of bits of the packet as a seed for a hash code generator.

1 19. The method of claim 18, wherein the hash code generator is a pseudo random  
2 number generator.

1 20. The method of claim 18, wherein the hash code generator is a shift register  
2 with a feedback loop.

1 21. The method of claim 18, wherein the hash code generator has a non-zero  
2 probability of generating the same tag from different input packets.

1 22. The method of claim 18, wherein the length of the tag is determined by the  
2 probability of the hash code generator producing the same hash code from different  
3 input packets.

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A4  
1 23. A method comprising:  
2 computing a tag for a packet;  
3 looking up the tag in a table, the table comprised of entries, <sup>each of</sup> the entries  
4 associating information about the flow with <sup>a</sup> tag;  
5 updating information about the flow associated with the tag if there is an  
6 entry for the tag;  
7 creating a new entry in the table if there is no entry for the tag;  
8 removing entries that have not been accessed for a predetermined period  
9 from the table.

1 24. The method of claim 23, wherein the creating further comprises storing data  
2 extracted from the packet in the entry.

1 25. The method of claim 24, wherein the data includes billing information for the  
2 packet.

1 26. The method of claim 24, wherein the packet is sent to a system with  
2 resources for analyzing the packet and determining billing information to be  
3 associated with the entry for the tag.

1 27. The method of claim 23, wherein the removing further comprises transferring  
2 the data associated with a tag to a system with resources for storing information.

1 28. The method of claim 23, wherein the computing further comprises using a  
2 mask of bits of the packet as a seed for a hash code generator.

1 29. The method of claim 28, wherein the hash code generator is a pseudo random  
2 number generator.

1 30. The method of claim 28, wherein the hash code generator is a shift register  
2 with a feedback loop.

1 31. The method of claim 28, wherein the hash code generator has a non-zero  
2 probability of generating the same tag from different input packets.

1 32. The method of claim 28, wherein the length of the tag is determined by the  
2 probability of the hash code generator producing the same hash code from different  
3 input packets.